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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,734	12/28/2001	Morio Gaku	2001-1911	4414

513 7590 07/29/2003

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WASHINGTON, DC 20006-1021

EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,734

Applicant(s)

GAKU ET AL

Examiner

M. Alexandra Elve

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/271,897.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-13 & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US Pat. 4,751,146) in view of Hanson (US Pat. 5,863,446).

Maeda et al. discloses a laminate printed circuit board. It is constructed of several layers; one of the layers is made up of mixtures of ethylene/comonomer copolymer, heat-conducting inorganic filler, glass fiber (or glass cloth or mat). Another layer is an electrically conductive layer, which may be a metal foil, metal plating or metal deposition. Copper is one of the metals used. Other layers may contain a thermosetting resin and a heat-resistant thermoplastic layer. Although Maeda et al. teaches a circuit board which is used for mounting semiconductor devices, through hole device affixation is not specifically taught.

Hanson discloses using a laser to make blind vias and through vias in a laminate substrate (printed circuit board). Vias are drilled using a laser with energy densities per

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pulse from 2 J/cm² to 10 J/cm². Additionally, a polymeric photoabsorptive layer (auxiliary material) was applied on the top surface of the laminate substrate in order to enhance the quality of a via entrance. The exit variance of a through via can be enhanced by applying a polymeric photo-absorptive layer on the exposed bottom surface of the laminated substrate and a conductive layer in intimate contact with the photo-absorptive layer (backup sheet). It would have been obvious to one of ordinary skill in the art at the time of the invention to drill vias in a printed circuit board, as taught by Hanson, in the Maeda et al. board because these are merely variations used for device affixation.

The prior art discloses a product substantially similar to a claimed product, differing only in the manner by which it is produced. It has been held that one of ordinary skill in the art at the time of the invention would have considered the claimed compositions to have been obvious because of the similarity in the properties. The burden falls to the applicant to show that any process steps associated with the claimed product result in a materially different product from those of the prior art, because there is nothing in the record before the examiner to reasonably conclude that applicant's product differs in kind from those obtained by the references. See In re Brown 173 USPQ 685 and In re Fessmann 180 USPQ 324.

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Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. in view of Hanson, as stated rejection of claims 11-13 & 19-20, above and further in view of Gannon (US Pat. 5,916,401).

Maeda et al. and Hanson teach the presence of a polymeric photoabsorptive layer (auxiliary material) applied to the top surface of the laminate substrate in order to enhance the quality of a via entrance, but do not teach the use of a water soluble material.

Gannon discloses the use of a coating on a substrate. One suitable coating material is a water soluble polymer. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a water soluble polymer, as taught by Gannon, in the Maeda et al. and Hanson polymeric photoabsorptive layer (auxiliary material) because of the ease of removal in a manufacturing environment and hence enhanced production efficiency.

Response to Amendment

Upon carefully reviewing Applicant's arguments filed June 11, 2003 the Examiner acknowledges applicants cancellation of claims 1-10, the amendment of claims 12-18 & 20.

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Applicant's argument filed June 11, 2003 (paper #5) have been fully considered but they are not persuasive.

Applicant argues that Maeda et al. does not teach a method of forming a penetration hole through the laminate. Instant claims are directed to a laminate product. Additionally, the 35 USC 103 claim rejections were based on a combination of art, that is, instant claims were unpatentable over Maeda et al. in view of Hanson. Furthermore, unobviousness cannot be established by attacking the reference individually when the rejection is based on a combination of references. *In re Novak* 16 USPQ 2d 2041, 2043 (Fed. Cir., BPAI 1989); *In re Merck & Co.* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); *In re Keller* 208 USPQ 871 (CCPA 1981); *Ex parte Varga* 189 USPQ 204; *Ex parte Campbell* 172 USPQ 91; *In re Scheckler* 168 USPQ 716 (CCPA 1971); *In re Young* 159 USPQ 725; *In re Lyons* 150 USPQ 741. The prior art discloses a product substantially similar to a claimed product, differing only in the manner by which it is produced. It has been held that one of ordinary skill in the art at the time of the invention would have considered the claimed compositions to have been obvious because of the similarity in the properties. The burden falls to the applicant to show that any process steps associated with the claimed product result in a materially different product from those of the prior art, because there is nothing in the record before the examiner to reasonably conclude that applicant's product differs in kind from those obtained by the references. See In re Brown 173 USPQ 685 and In re Fessmann 180 USPQ 324.

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Applicant argues that Hanson discloses the use of a YAG laser and not a CO2 laser as instant claims. Both types of lasers are used in the electronics industry and thus these lasers are functional equivalents and the fact that Hanson teaches the use of a laser used for circuit boards is relevant in view of the rejection of instant claims.

Applicant argues that Gannon does not teach the forming of a penetration hole by means of oscillation of a CO2 laser. The 35 USC 103 claim rejections were based on a combination of art, that is, instant claims were unpatentable over Maeda et al. in view of Hanson and Gannon. Unobviousness cannot be established by attacking the reference individually when the rejection is based on a combination of references. *In re Novak* 16 USPQ 2d 2041, 2043 (Fed. Cir., BPAI 1989); *In re Merck & Co.* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); *In re Keller* 208 USPQ 871 (CCPA 1981); *Ex parte Varga* 189 USPQ 204; *Ex parte Campbell* 172 USPQ 91; *In re Scheckler* 168 USPQ 716 (CCPA 1971); *In re Young* 159 USPQ 725; *In re Lyons* 150 USPQ 741. Furthermore the Gannon coating is directed to coating in the production of printed circuit boards.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is (703) 308-0092. The examiner can normally be reached Monday to Friday from 6:30 AM to 3:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Tom Dunn, can be reached on (703) 308-3318.

Any inquiry of general nature to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0661.

July 27, 2003.



M. ALEXANDRA ELVE
PRIMARY EXAMINER